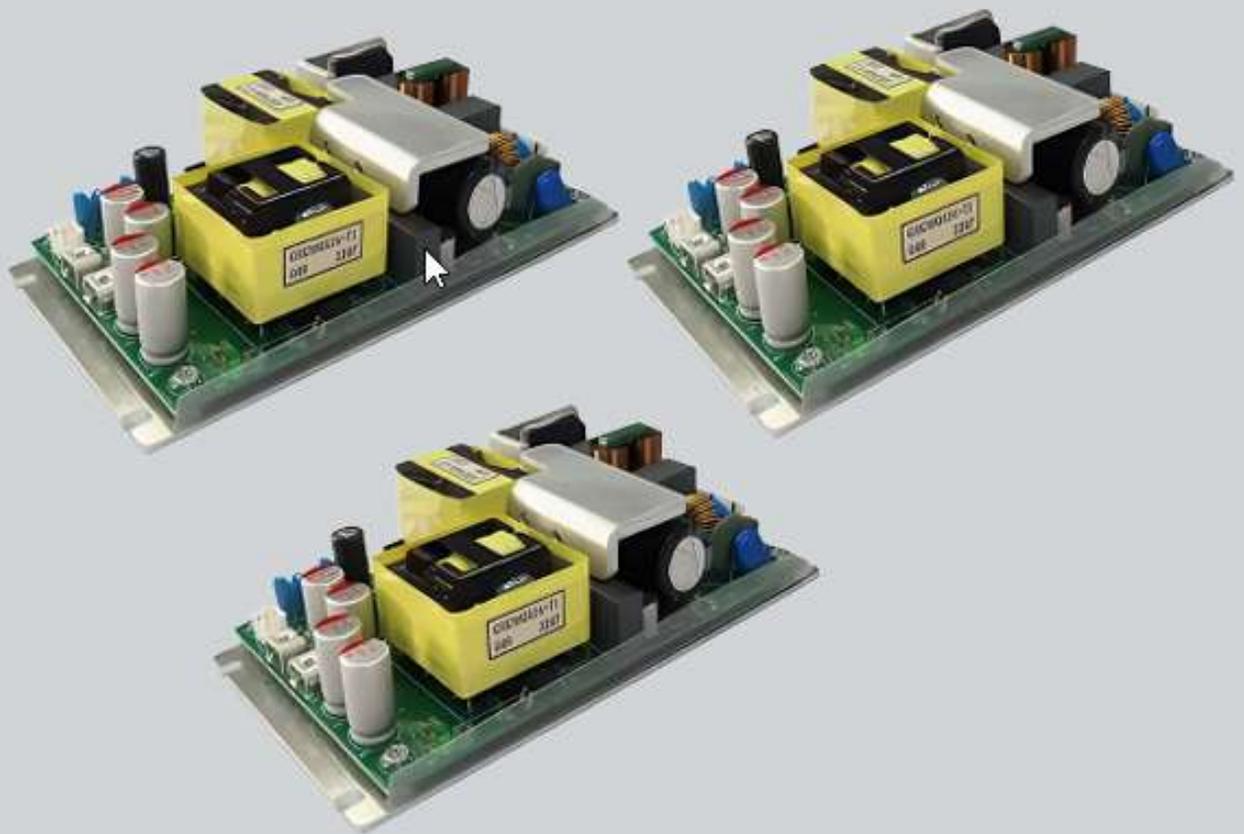


TECHNICAL SPECIFICATION

# GSK360A Series

Open-Frame AC-DC Board Mount Power Supply  
for Consumer & Industrial Products



## OVERVIEW

The GSK360A family of miniature open-frame chassis mount AC/DC power supplies deliver 360W of output power with a ultra-wide universal input range of 85 to 300 Vac. The series includes three models featuring a precise regulated single-output voltage selection of 12, 24 or 48Vdc.

With efficiency up to 93% and extremely low no-load power consumption less than 0.5W typically, GSK600A models meet global low power consumption and safety standards. The devices incorporate built-in EMI filtering that ensures compliance with FCC and EN/EN55032 Class B while superior EMC characteristics protect end-use electronics from electromagnetic interference.

They are ideal for powering industrial tools, measurement instruments, industrial automation equipment, handheld household devices, gaming consoles and other portable gear.

## FEATURES

- Compact Size; Low Profile
  - 5.51"(L) x 3"(W) x 1.37"(H)
  - 140mm(L) x 76.2mm(W) x 34.8mm(H)
- Wide AC input range (90-264Vac)
- Active PFC (typical:0.99@115Vin, 0.96@230Vin)
- High efficiency design to meet 93% at 50% load
- 360W Single DC output at 12V, 24V or 48V
- No-load power consumption 0.5W typical
- EN55032 EMI Class B with no modifications
- Wide operating temperature range -20°C to70°C
- Wide operating temperature range (-20°C to 70°C) and 40°C can power up (derating above 50°C)
- Convection cooled
- Full protection for Input UVP, Output OVP, OCP, SCP, OTP
- Cost effective, reliable design
- Directive 2002/95/EC (RoHS) Compatible
- Meets safety standard of IEC/UL62368-1





## SCOPE

This document describes the specifications for the GSK360A open-frame AC/DC power supplies.

## MODEL SELECTION

Description	GSK360A12	GSK360A24	GSK360A48
<b>DC Output</b> (Min, Nominal, Max)	11.76 / 12 / 12.24V	23.52 / 24 / 24.48V	47.04 / 48 / 48.96V
<b>Current Range</b>	0 - 30A	0 - 15A	0 - 7.5A
<b>Rated Power</b>	360W	360W	360W

## ABSOLUTE MAXIMUM RATINGS

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only, functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect the device reliability.

## INPUT SPECIFICATIONS

Description	GSK360A12	GSK360A24	GSK360A48
<b>Input Voltage Range</b> Typical	90-264VDC (Safety voltage 100-240Vac)		
<b>Frequency</b>	47-63Hz/50/60Hz typical		
<b>Input Current, Max</b> $V_{in}=100V, P_o=360W$	5.5A		
<b>Inrush Current, Typical</b>	70A typical 230VAC cold start		
<b>Power Factor, Min/Typical</b>	95%/98%, Meets EN61000-3-2, Class A		
<b>Earth Leakage Current</b>	< 3.5mA/264VAC		
<b>No Load Input Power,</b> Typical/Max	<0.5W/1W@115/264VAC, unit enabled		
<b>Efficiency, Typical at</b> 230 VAC/50%Load	92%	93%	93%
<b>Switching Frequency</b>	105 KHz		





## PROTECTION

Description	GSK360A12	GSK360A24	GSK360A48
<b>Fusing</b>	Fuse in line		
<b>Input Under Voltage (UVP)</b>	Triggers at 70VAC		
<b>Output Over Current (OCP)</b>	110%-150% rated output power Protection type: Hiccup mode, recovers automatically after fault condition removed		
<b>Output Over Voltage (OVP)</b>	110% load min Protection type: Latch mode, power cycle after fault condition removed and power cycle		
<b>Short Circuit (SCP)</b>	Protection type: Hiccup mode, recovers automatically after fault condition removed		
<b>Over Temperature (OTP)</b>	Protection type: Latch mode, power cycle after fault condition removed and power cycle		

## DC OUTPUT SPECIFICATIONS

Description	GSK360A12	GSK360A24	GSK360A48
<b>Rated Power</b>	360W	360W	360W
<b>Output Voltage 1, Vdc</b> Typical	12V	24V	48V
<b>Output Voltage 2, Fan</b>	12V nominal $\pm 15\%$ at Main/Output > 10%		
<b>Output Current 1, Amps</b>	30A	15A	7.5A
<b>Output Current 2, Fan</b>	0.5A	0.5A	0.5A
<b>Ripple and Noise</b> <sup>1</sup>	$\pm 1\% V_{out}$ , nominal	$\pm 2\% V_{out}$ , max	
<b>Output Overshoot</b>	$\pm 5\% V_{out}$		
<b>Voltage Tolerance</b> <sup>2</sup>	$\pm 5\%$		
<b>Load Regulation</b>	$\pm 0.2\%$	$\pm 0.2\%$	$\pm 0.2\%$
<b>Line Regulation, Max</b>	$\pm 0.1\%$	$\pm 0.1\%$	$\pm 0.1\%$
<b>Min Load</b>	No requirement		
<b>Transient Response</b>			
<b>Dynamic 1</b> (1A/us) 25% to 75% load	$\pm 4\%$ max		
<b>Dynamic 2</b> (1A/us) 5%-50% and 50%-100% load	$\pm 5\%$ max		
<b>Recovery Time</b> Back to 1%Vout	500uS		
<b>Turn On Overshoot</b>	5%V		

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<b>Delay Time</b> , Nominal/Max	1/1.5 Seconds, 115/230VACin at 90° Load		
<b>Rise Time</b> , Typical/Max, 10%-90%	30ms/50 mS, 115/230VACin at 90° Load		
<b>Capacitive External Load</b>	8000 $\mu$ F	4000 $\mu$ F	2000 $\mu$ F
<b>Hold Up Time</b> , Min	12ms at nominal input at full load		

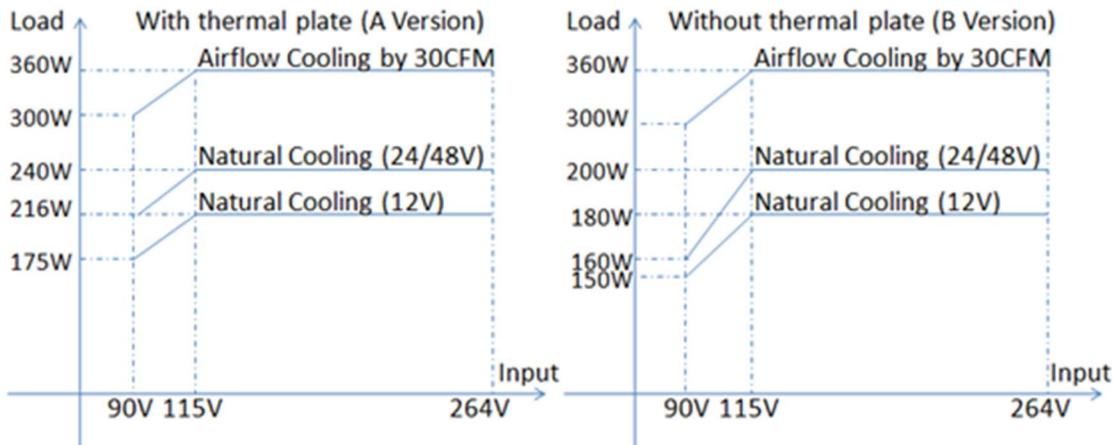
1. Ripple & noise are measured at 20MHz of bandwidth using a 12" twisted pair-wire terminated with a 0.1 $\mu$ f & 47 $\mu$ f parallel capacitor at 115/230VAC input at full load.
2. Tolerance: includes set up tolerance, line regulation and load regulation.
3. Unit does not support current sharing applications.

## ENVIRONMENTAL SPECIFICATIONS

Description	
<b>Working Temperature</b>	-20 to +50°C
<b>Operating Humidity</b>	5%-95% RH non-condensing
<b>Storage Temperature</b>	0 - 85°C
<b>Temp. Coefficient</b>	$\pm 0.03\% \times V_{out}/^{\circ}\text{C}$ (0 - 50°C)
<b>Solder Temperature</b>	Wave soldering: 265°C, 5s (max.); Manual soldering: 390 °C, 3s (max.)
<b>Operating Altitude</b>	16,404 feet / 5000 meters

1. Derated from 50 °C to 70 °C by 2.5% / °C. See derating curve for natural cooling conditions.

## Derating Curves





## LED indicator

There is one LED located on PCB (secondary side) to indicate PSU status. When the LED is green, the unit is in the power on state. When the LED is off, there is no AC input or there is a power output failure.

## SAFETY & EMC

Description			
<b>Safety Standards</b>	IEC62368-1 cULus (24V approved, other voltages meet requirements and will be filed)		
<b>FCC CISPR Compliance</b>	FCC part 15B and EN55032 (QP/AV method)		
<b>Harmonics</b>	EN 61000-3-2 / ETSI EN 300386 V1.3.2, Class A		
<b>Withstand Voltage</b>	Input to Output: 3KVAC		
<b>Isolation Resistance</b>	Input to Output: 100M Ohms / 500VDC / 25°C/ 70% RH		
<b>Lightning AC power fault</b>	GR-1089 Issue 4		
<b>EMC Emission</b>	<b>Parameter</b>	<b>Standard</b>	<b>Test Level/Note</b>
	Conducted	EN55032(CISPR32), QP/AV method	Class B + Sys Box
	Radiated	EN55032(CISPR32), FCC Controlled System	Class B + Sys Box
	Harmonic Current (Note 5)	EN61000-3-2	Class A
	Voltage Flicker	EN61000-3-3	
<b>EMC Immunity</b>	<b>EN55035, EN61000-6-2</b>		
	<b>Parameter</b>	<b>Standard</b>	<b>Test Level/Note</b>
	ESD	EN61000-4-2	±8KV air; ±4KV contact, Criteria B
	Radiated Susceptibility	EN61000-4-3	3 V/m, Criteria A
<b>EMC Immunity, cont.</b>	EFT/Burst	EN61000-4-4	±2KV (Level 2)
	Surge	EN61000-4-5, EN55024, ETSI EN300386 V.1.3.2	DM ±2KV, CM ±4KV, Criteria B
	Conducted Susceptibility 150KHz-80MHz, 10V, 80%AM	EN61000-4-6, EN55024, ETSI EN300386 V.1.3.2	Criteria A
	Radiated Susceptibility	EN61000-4-3, EN55024, ETSI EN 300 386 V1.3.2	Criteria A
	Voltage Dips and interruptions	EN61000-4-11, EN55024, ETSI EN300386 V.1.3.2	Criteria B and C





**Notes:** EMC Performance criteria are defined as following:

- A. Normal performance during and after the test
- B. Temporary degradation, self-recoverable
- C. Temporary degradation, operator intervention required to recover the operation
- D. Permanent damage

Voltage Drop	Duration Time	Criteria
0%Ut	12ms	B
70%Ut	500ms	C
40%Ut	200ms	C
0%Ut	5000ms	C

## SAFETY & RELIABILITY

Description	
<b>Hi-pot</b>	<10 mA, Pri-Sec: 3000Vrms, 10 mA 1 min
<b>Leakage Current</b>	<3.5mA, 264VAC / 60Hz
<b>Insulation Resistance</b>	>100Mohm, Input to output at 500 VDC.
<b>RoHS</b>	Directive 2002/9/EU

## ISOLATION SPECIFICATIONS

Isolation Voltage from Primary to Secondary (Main Output)	3000Vac@1Min
Isolation Voltage from Primary to Earth	1500Vac@1Min
Isolation Voltage from Main output to Earth	500Vdc@1Min
Isolation Voltage from main output and fan power	100Vdc@1Min

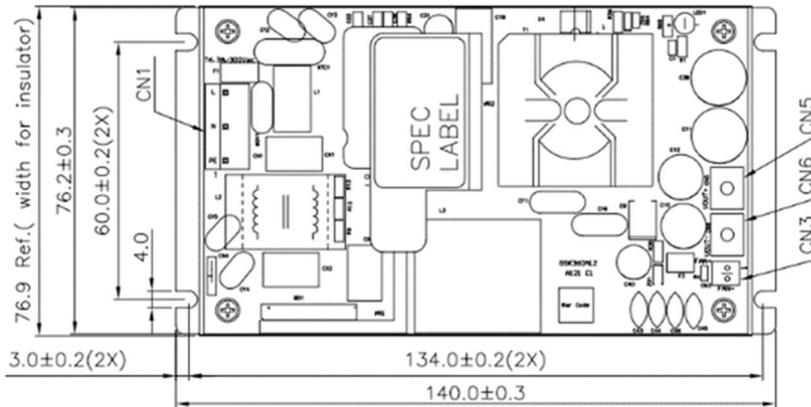


## MECHANICAL PACKAGE

### Description

**Dimensions - L x W x H in / mm**     5" x 3" x 1.58" / 127mm x 76.2mm x 40mm

**Weight oz / g**     13.58 / 385



### Connectors Information

	Connector type	Mating Connector type
CN1	JWT A3963WV2-5P,P2 P4 empty or equivalent	JWT A3961H2-5P or equivalent
CN3	JWT A2501WV2-2P or equivalent	JWT A2501H02-2P or equivalent
CN5	M3 copper terminal	
CN6	M3 copper terminal	

### Pin assignments for CN1

P1	P2	P3	P4	P5
PE	NC	N	NC	L

### Pin assignments for CN3

P1	P2
FAN+	FAN-

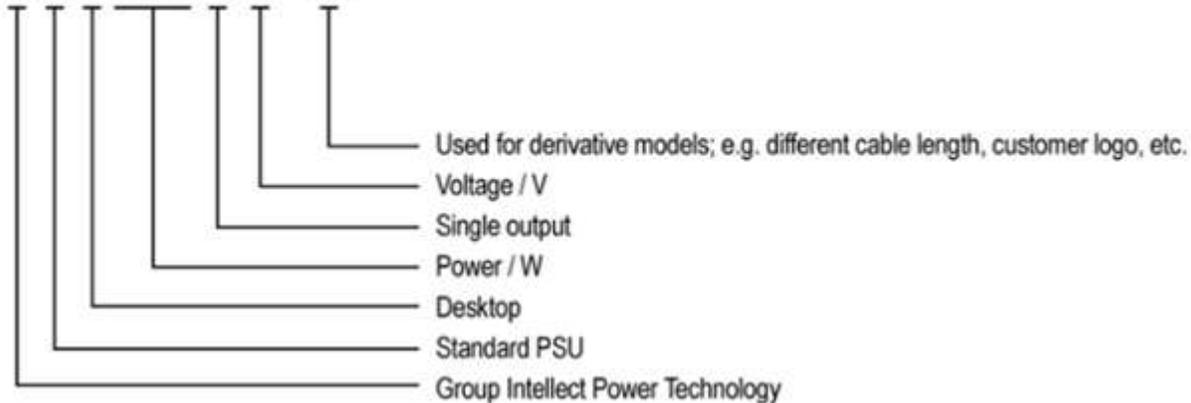
### Pin assignments for CN5/CN6

CN5	CN6
Vout+	Vout-



## PART NUMBERING

GSK360Axx-xx



## NOTES

1. PSU should have adequate airflow to avoid triggering OTP
2. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
3. Ripple & noise are measured at 20MHz of bandwidth using a 12" twisted pair-wire terminated with a 0.1µf & 47µf parallel capacitor.
4. The power supply is considered as an independent unit, but the final equipment still needs to re-confirm that the whole system complies with the EMC directives and safety regulations.

**All specifications are typical at nominal input, full load, at 25°C ambient unless otherwise noted. Specifications are subject to change without notice. Please consult our Applications Engineering office at 858-275-6423 for additional technical data and support or email us at [info@brightworks-usa.com](mailto:info@brightworks-usa.com).**

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